Fingerprints of climate change on UK weather in 2020

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2020 was a remarkable year for our climate, with the year being the UK's third warmest, sixth wettest and eighth sunniest in the UK national series, extending back to 1884, 1862 and 1919, respectively.

An attribution study looking at the temperatures for 2020 has been produced by the Met Office using peer-reviewed methods. The result is available on Carbon Brief. It suggests that without human-induced climate change, a year as warm as 2020 in the UK would have a likelihood of 1.1 % (uncertainty range 0.9 % – 1.3 %), or around one year in 90. For the present day climate the likelihood estimate increases by around a factor of 50, to 56% (range 53 % – 58 %) suggesting an expectation that we would now expect around half of years to exceed the warmth of 2020.

The impact of climate change on total annual rainfall for the UK is less clear than for temperature. This is a consequence of the high variability in rainfall over the UK, and also because climate change is most likely to result in wetter winters and drier summers overall, change which will consequently be less obvious in an annual total. However the likelihood of years as wet as 2020 is increasing, and is expected to continue to do so through the 21st Century.

Dr Mark McCarthy is the head of the Met Office's National Climate Information Centre. He said: "The dominance of above average temperatures throughout the year are clearly apparent, with notable warm spells in April, June, August, and November. Only July and October being cooler than average overall. The exceptional rainfall in late winter followed by the extended dry and sunny spring really dominate the rainfall and sunshine series for the year."

Dr Nikos Christidis is a senior climate scientist with the Met Office. Nikos, who specialises in climate attribution, said: "An attribution study allows you to run scenarios on climate models using varying concentrations of atmospheric greenhouse gases. By looking at the atmosphere of pre-industrial times you can see that the high annual mean temperature of 2020 would have been quite a rare event. But with today's levels of greenhouse gases we can expect temperatures of this level to occur slightly more frequently than one year in two. In future this will increase further."

Dr Mark McCarthy added: "Our weather is playing out on a background of ongoing global climate change. It is therefore no surprise at all that the UK climate is also continuing to change as a result. The UK has warmed by close to 1.0 °C, comparable to the global rise in mean temperature."

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